

MAY 21 1993

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

In the Matter of  
  
Amendment of Part 90  
of the Commission's Rules  
to Adopt Regulations  
for Automatic Vehicle  
Monitoring Systems

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PR DOCKET NO. 93-61  
RM 8013

To: The Commission

NORTH AMERICAN TELETRAC AND  
LOCATION TECHNOLOGIES, INC.'S  
APPLICATION FOR FREEZE

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Dated: May 21, 1993

No. of Copies rec'd 349  
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## SUMMARY

In this application, North American Teletrac and Location Technologies, through their joint venture PacTel Teletrac ("Teletrac"), seek a freeze of further awards of automatic vehicle monitoring ("AVM") licenses and special temporary authorities for AVM services in the 904-912 and 918-926 MHz bands services pending completion of the rulemaking to adopt permanent rules for this service.

The Private Radio Bureau has licensed, and is continuing to license, interfering narrowband AVM systems on frequencies reserved for wideband pulse-ranging systems. The Commission's interim rules, in effect since 1974, maintain a separation between narrow and wideband systems. The Notice of Proposed Rulemaking to adopt permanent rules for AVM, renamed LMS, acknowledges that narrowband systems do interfere with the operation of wideband pulse-ranging systems and recommends that these narrowband systems be moved out of the band.

The Private Radio Bureau has also begun to license multiple wideband systems in 904-912 and 918-926 MHz in the same geographic area despite the clear guidance of the 1974 Report and Order adopting the interim AVM rules that only two per market should be licensed (1974 Report and Order, 30 RR2d 1661, 1665 ¶ 10). The Commission's NPRM expressly states that the Commission does not yet know whether sharing among wideband systems is feasible. The evidence of record

suggests that sharing among wideband systems is impractical if not impossible and there is no contrary technical evidence in the record.

A failure to freeze applications will have a detrimental effect on existing commercial operators of wideband AVM systems and may undermine the Commission's efforts to promote AVM services as evidenced by the NPRM.

Accordingly, a freeze is in the public interest and should be imposed.

RECEIVED

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To: The Commission

NORTH AMERICAN TELETRAC AND  
LOCATION TECHNOLOGIES, INC.'S  
APPLICATION FOR FREEZE

I. INTRODUCTION

Pursuant to 47 USC §§ 154(i), 303(c) and (r), North American Teletrac and Location Technologies, Inc., through their joint venture PacTel Teletrac ("Teletrac"), respectfully request that the Commission freeze further awards of licenses and special temporary authorities to persons seeking to operate automatic vehicle monitoring ("AVM") services within the 904-912 and 918-926 MHz bands under the interim rules contained at 47 C.F.R. §90.239. The Commission issued a Notice of Proposed Rulemaking ("NPRM") to adopt permanent rules on April 9, 1993.<sup>1</sup> The proposed freeze would remain in place until final LMS rules are effective.

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<sup>1</sup> Since the NPRM proposes to permit expanded use of AVM systems to become general location monitoring services, the Commission also proposes to rename and redefine AVM service as the Location and Monitoring Service ("LMS"). (NPRM ¶ 29.) This application will use AVM and LMS interchangeably.

A freeze is essential for a number of reasons. First, despite the plain language of the Commission's Interim AVM Rules (47 C.F.R. § 90.239), which expressly assign narrowband and wideband AVM systems to different frequencies, the Private Radio Bureau (the "Bureau") has licensed a number of narrowband systems in the

\_\_\_\_\_ the use of these frequencies has been continued despite the

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than greenmail opportunities to real commercial providers if no other means of profit come into existence. That licensing of wideband systems becomes even more alarming when the Commission is uncertain whether sharing among wideband systems is technically feasible (NPRM ¶ 22). In these circumstances, continued licensing is nothing more than a costly mechanism with no public benefits.

Third, continual licensing of systems will cause interference to wideband pulse-ranging systems, such as Teletrac's, and, therefore, will chill Teletrac's incentives to construct new systems. A frost has already settled in, given the uncertainties created by the NPRM. Continued licensing of systems that (a) do not belong in the wideband allocation under the present rules and (b) would be moved out of the wideband allocation under the LMS rules proposed in the NPRM, will only further reduce incentives to construct. The result may be a destruction of the very industry the Commission desires to promote by the adoption of permanent rules. The affidavit of Cynthia S. Czermer, Teletrac's Vice President of Corporate Development, attached as Exhibit A, supports this conclusion.

Accordingly, a freeze is required and should be granted.

## **II. ARGUMENT**

### **A. A Freeze is Required Based on the Commission's Own Tentative Findings**

The Commission has often implemented a freeze where the continued grant of licenses during a rulemaking proceeding could wreak havoc with the licensing scheme.

The Commission's discretion to freeze licenses is quite broad. Kessler v. FCC, 326 F.2d 673 (D.C. Cir. 1963).

The circumstances here warrant exercise of that discretion. There is no question that narrowband emissions cause interference to wideband systems and, as discussed below, narrowband operators have dragged their feet to resolve interference problems. (See infra, section IIB.) The Commission's own rules explicitly require narrowband systems to be placed outside 904-912 MHz and 918-926 MHz. As for wideband systems, the Commission does not even know whether sharing among wideband systems is feasible and has no rules in place to govern sharing.<sup>3</sup>

**1. The Interim Rules Reserve 904-912 MHz and 918-926 MHz for Wideband Pulse-Ranging AVM Systems**

The Commission's 1974 Report and Order<sup>4</sup> found that only wideband pulse-ranging systems were to be accommodated between 904-912 MHz and 918-926 MHz. 47 CFR § 90.239(c) embodies the Commission's finding. It states that frequencies are assignable as set out in the regulations. That mandatory language does not permit two interpretations. Thus, as written, the current rules are conclusive that

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<sup>3</sup> Pinpoint, for example, proposes a TDMA system (which will not work) -- see Affidavit of Charles L. Jackson, attached as Exhibit B. This affidavit was originally filed as an attachment to Teletrac's reply comments in support of its Petition to Deny Pinpoint's 20 applications for paper systems. Southwestern Bell, on the other hand, seems to need FDMA for its paper system to work.

<sup>4</sup> Inquiry As To Automotive Vehicle Locator Systems in the Land Mobile Radio Services, 30 R.R.2d 1665 (1974).



narrowband and wideband systems will not inhabit the same frequencies.<sup>5</sup> The interim rules provide no basis for the Bureau to license narrowband systems for operation on wideband frequencies. Nonetheless, it has done so, and other applications are pending. Accordingly, a freeze is necessary to prevent further misapplications of the current rules.

Parties commenting on Teletrac's Petition for Rulemaking described how narrowband operators came to be licensed in the wideband frequencies.<sup>6</sup> According to these commentators, they met with the Private Radio Bureau licensing staff and were permitted to place narrowband operations into the 904-912 and 918-926 MHz bands.<sup>7</sup> These non-complying license holders now claim "long-standing" rights to be in the band based on these meetings, despite the unambiguous language of the Commission's Interim Rules and its 1974 Report and Order.

Regardless of how the licenses were awarded, the decision to grant narrowband operators licenses in the wideband designated frequency is not in accord either with the Interim Rules or with the Commission's expression of concern in its NPRM about co-channel noise. As the Courts have stated frequently and recently:

[I]t is elementary that an agency must adhere to its own rules and regulations. Ad hoc departures from those rules, even to achieve laudable aims, cannot be sanctioned, (citation omitted) for therein lie the seeds of destruction of the orderliness and predictability which are the hallmarks of

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<sup>5</sup> Although each subpart of 90.239(c) uses the words "may be authorized" the plain language of the rules suggests no conflict with the mandatory "are assignable" directive.

<sup>6</sup> See Opposition to Petition for Rulemaking of Amtech Corporation, In the Matter of Amendment of Section 90.239 of the Commission's Rules to Adopt Permanent Regulations for Automatic Vehicle Monitoring Systems, RM No. 8013, at p. 22-24.

<sup>7</sup> Id. at 23.

lawful administrative action. Simply stated, rules are rules, and fidelity to the rules which have been properly promulgated, consistent with applicable statutory requirements, is required of those to whom Congress has entrusted the regulatory missions of modern life.<sup>8</sup>

## **2. The Commission May Only License One Pulse-Ranging Wideband System Per Segment**

The Commission has also begun to license multiple wideband systems in the 904-912 MHz and 918-926 MHz bands even though it admits it does not yet know whether these facilities can share the band in any practical way. ("Assuming that sharing of this spectrum is feasible...")<sup>9</sup> NPRM ¶ 22. (Emphasis supplied.) Teletrac has presented evidence that sharing is not feasible. (See also p 9. infra.) There is no contrary evidence in the record. Given the lack of any technical basis to support multiple wideband systems, the Bureau bases its decision on a negative, i.e., the Commission states it does not find sufficient evidence to support licensing single AVM systems in each segment.<sup>10</sup> The Commission cannot direct the Bureau to allow "open entry" into the wideband spectrum without knowing whether that segment can accommodate more than one system and, if so, how many systems and under what rules that sharing will take

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<sup>8</sup> Reuters Ltd. v. FCC, 781 F.2d 946, 950-51 (D.C. Cir. 1986), citing, Teleprompter Cable Systems v. FCC, 543 F.2d 1379, 1387 (D.C. Cir. 1976); See also Schurz Communications, Inc. v. FCC, Slip Op. Nos. 91-2350 et al., decided November 6, 1992; AT&T v. FCC, Slip Op. No. 92-1053 at 10, decided November 13, 1992.

<sup>9</sup> Of course, the Commission is using the term "exclusive" in a very different sense than Teletrac ever has. There are a variety of LMS providers in other bands -- i.e., below 512 MHz, and narrowband systems were also to be licensed in other portions of the 900 band. When they operate within their allocated portion of the spectrum, these providers compete, but do not interfere with the wideband operators' portion of the spectrum.

<sup>10</sup> NPRM ¶ 12, n. 29.

place. The Bureau's current licensing practice is contrary to the Interim Rules, and there is no record to support its approach.

The Interim Rules were intended to provide flexibility and experimentation. That did not mean that systems would be allowed to interfere with one another. Given the Commission's acknowledged lack of information on whether multiple wideband systems can co-exist and, if so, the number that can co-exist, no additional wideband licenses that could interfere with existing licenses should be issued until conclusion of the rulemaking.

**a. Past proceedings suggest that the Commission intended only one wideband system per segment**

The 1974 Report and Order explicitly and specifically states that only two separate wideband systems may be accommodated in each market.<sup>11</sup> Until a contrary finding is reached through rulemaking, the agency is bound by its earlier conclusion. As the courts have consistently held, regulatory agencies must construe rules consistently with their own prior interpretations of those rules.<sup>12</sup>

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<sup>11</sup> 1974 Report and Order, 30 R.R.2d at 1671. ¶ 10.

<sup>12</sup> When construing agency rules, contemporaneous agency interpretations and explanations of the rules should be considered. *E.g.*, Vermont v. Thomas, 850 F.2d 99, 103 (2nd Cir. 1988) (preamble of Environmental Protection Agency regulations considered when determining the scope of the regulations); United States v. Alcan Aluminum Corp., 964 F.2d 252, 262-63 (3rd Cir. 1992) (Environmental Protection Agency explanation in Federal Register publication of final rule given deference); Borelli v. Reconstruction Finance Corp., 196 F.2d 730, 734-36 (Emer. Ct. App. 1952) (Office of Price Administration statement of considerations made when adopting regulation considered).

There is no doubt that, within each segment of the spectrum allocated to AVM, only one system was to be licensed. The regulatory history leading to adoption of the Interim Rules demonstrates this fact. The Hazeltine Petition for Rulemaking (RM-1734) requested use of two ten-MHz sub-bands in the 902-928 MHz ISM band, observing that these two sub-bands provided sufficient spectrum for two pulse-ranging systems in an area.

The system which Hazeltine proposes to provide for AVM Information Service is based on pulse transmissions. Consequently, the bandwidth required by the system is 10 MHz. However, one 10 MHz channel will be sufficient to serve the vehicle monitoring information needs of tens of thousands of vehicles in a large population center. Furthermore, there is sufficient bandwidth in the proposed allocation to permit two pulse systems in the same area, each using 10 MHz of bandwidth, with 6 MHz of separation (the ISM mid-band) between them. It is unlikely that the market would support more than two high-capacity services in the same area. Similarly, since transmissions at the frequencies under discussion are line-of-sight, there is small likelihood of interference between systems operating in separate large population centers. But in the event of two independent systems operating in centers close enough so that interference by line-of-sight transmission is possible, two different 10 MHz systems could operate without mutual interference.<sup>13</sup>

The Commission's Notice of Proposed Rulemaking in RM 1734 explicitly stated that the Hazeltine proposal was a central issue<sup>14</sup> and, in adopting the interim rules, explicitly noted its agreement with Hazeltine's analysis.

... Accordingly, we are providing for wideband AVM operation in the frequency band 904-912 MHz and 918-926 MHz. This reduces the bandwidth for the pulse-ranging techniques from 10 MHz to 8 MHz, but

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<sup>13</sup> Hazeltine Corporation Petition for Rulemaking, RM 1734, filed Dec. 24, 1970 at 29-30.

<sup>14</sup> See 35 F.C.C.2d 692, 694 (1972).

we are satisfied that this is adequate for this operational method, and under this approach, two separate wideband AVM systems may be accommodated in each market.<sup>15</sup>

Given the regulatory history, it is obvious that competition for wideband service providers was expected to come from portions of the spectrum other than 904-912 and 918-926 MHz. For example, 47 C.F.R. § 90.239(c)(2) permits systems requiring bandwidths not exceeding 1 MHz to be licensed in 903-904 and 926-927 MHz on a developmental basis. Others not requiring more than 25 KHz are permitted to be

permitted in additional channels 510 MHz. 47 C.F.R. § 90.239(c)(2)

chaos. Certainly such circumstances warrant a freeze until final action has been taken.

**B. Absent a Freeze, Increasing Interference Will  
Deter Investment In this Technology**

Teletrac holds Commission-issued licenses to operate AVM systems in many areas throughout the United States. These licenses were granted under the Interim Rules, largely on the basis of Teletrac's demonstration of its technical capabilities and its commitment to make a substantial investment in the widespread installation of AVM systems. That level of commitment will not continue in the irrational licensing environment currently in place. According to Teletrac's Vice President for Corporate Development

Continual licensing of systems the FCC knows will cause interference to system operators makes it unlikely that investors will commit funds to build new systems or expand existing systems. The uncertainty associated with this random licensing makes it less likely that any general purpose metropolitan area AVM systems will be in the market for the long term. We believe that in these circumstances, Teletrac's economic future is in doubt.

(Czerner Affidavit ¶ 7.) For example, even after the NPRM which proposes to relocate narrowband systems within three years and which acknowledges narrowband systems interfere with wideband systems, the Bureau has issued five year licenses to narrowband systems operating on wideband frequencies.

Teletrac developed its AVM systems to use wideband, pulse-ranging technology in the 904-912 MHz band specifically in reliance upon, and in accordance with the Interim Rules as written, rather than as reinterpreted recently. (See Czerner Affidavit ¶ 3.) Deployment of Teletrac's AVM technology followed years of extensive

research and development and expenditures of tens of millions of dollars. As required by the Interim Rules, Teletrac's innovative technology was designed -- and operates -- to tolerate interference from ISM and government systems, both of which have higher priorities of use in the band.<sup>18</sup>

Unfortunately, after commercial operations began, Teletrac discovered that, contrary to the explicit provisions of the Interim Rules, certain firms had obtained Bureau authorization to operate non-complying narrowband, signpost systems in the wideband allocation, i.e., 904-912 MHz and 918-926 MHz. In a number of instances, the signals from the narrowband systems have interfered with Teletrac's, causing substantial degradation of Teletrac's wideband service.<sup>19</sup>

Case-by-case negotiations to resolve these interference problems have proven difficult and time-consuming. Teletrac systems do not interfere with narrowband systems, so the narrowband operators have had little incentive to reach rapid accommodation with Teletrac. For example, Teletrac has been trying to negotiate a resolution to interference problems in the Dallas-Fort Worth area caused by narrowband emissions from Amtech tag readers for the past one and one-half years and was forced to file a complaint with the Commission's Field Operations Bureau when there was no progress in resolving the issues.<sup>20</sup>

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<sup>18</sup> 47 C.F.R. § 90.239(c)(ii); Czerner Affidavit ¶ 5.

<sup>19</sup> See Affidavit of John Piechota, attached as Exhibit C.

<sup>20</sup> See Correspondence between Teletrac and Mr. James D. Wells, Engineer-in-charge, Federal Communications Commission Field Operations Bureau, Dallas, Texas, October 20, 1992 (without attachments) and November 12, 1992, attached hereto as Exhibit D.

The problem is getting worse. Additional applications for narrowband, signpost systems to be operated at 904-912 and 918-926 MHz are being filed. Many of these systems will eventually cause interference to Teletrac systems, should they be constructed. Indeed, these applications may have been filed to deter Teletrac from proceeding with its buildout. If that is the goal, it may meet with some success.<sup>21</sup> Five licenses have already been approved over the objections of Teletrac and others without any notice despite the filing of Petitions to Deny.<sup>22</sup>

To remedy the significant problems -- without penalizing those who had already entered the band improperly -- and to bring certainty to the AVM industry, Teletrac filed a Petition for Rulemaking on May 26, 1992. The petition triggered the issuance of the pending NPRM, in which the Commission acknowledged the severity of the problems Teletrac identified. The Commission found that "co-channel noise does make it difficult, if not impossible for [an AVM] system to operate effectively." Accordingly, the Commission proposed to relocate narrowband operators out of the wideband operators' area of the spectrum.<sup>23</sup>

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<sup>21</sup> Since Teletrac's Petition for Proposed Rulemaking was filed in May of 1992, at least 23 applications from non-wideband operators have been filed. Teletrac and other wideband system operators have opposed 13 of the applications to date, essentially on the same grounds on which it is seeking this freeze. Nonetheless, without notice to the opponents or a hearing, and after the Commission's NPRM concluded that interference would be substantial, the Bureau inexplicably has recently begun to approve these licenses.

<sup>22</sup> In a separate application filed simultaneously, Teletrac is requesting that the Commission review the Bureau's approvals and stay the effectiveness of those licenses pending that review.

<sup>23</sup> NPRM at ¶¶ 4, 5, 8.



Having recognized the validity of Teletrac's concerns, the Commission should avoid allowing the problem to become worse. The Commission should freeze pending and future applications to enter 912-918 and 918-926 MHz until the new rules take effect.<sup>24</sup>

### III. CONCLUSION

For the reasons stated above, the Commission should prohibit any further licensing of nonconforming systems in the wideband AVM allocation pending resolution of this rulemaking.

Respectfully submitted,

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By: 

Stanley M. Gorinson

Counsel for North American  
Teletrac and Location  
Technologies, Inc.

Dated: May 21, 1993

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<sup>24</sup> This will not effect large numbers of band users such as Part 15 and amateurs.



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PR DOCKET NO. 93-61  
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To: The Commission

AFFIDAVIT OF CYNTHIA S. CZERNER  
IN SUPPORT OF APPLICATION  
FOR FREEZE

CITY OF WASHINGTON )

DISTRICT OF COLUMBIA )

ss:

CYNTHIA S. CZERNER, being duly sworn, deposes and says:

I, John Mice, President, Concrete Development for BusTel Teletron

a. First, narrowband and wideband pulse-ranging systems would not operate on the same frequencies (47 C.F.R. § 90.239(c));

b. Second, as described in the 1974 Report and Order, only one wideband system would be permitted in each wideband segment (30 RR2d 1661, 1665 at ¶ 10).

4. The FCC, however, has licensed multiple wideband systems as well as narrowband systems in the spectrum designated for wideband pulse-ranging systems.

5. Teletrac designed its system to tolerate interference for ISM and government stations in the band and not to interfere with those stations. (See 47 C.F.R. §



Before the  
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Washington, D.C. 20554

In the Matter of	)	
	)	
Pinpoint Communications, Inc.	)	FCC File Nos. 347483-347502
	)	
Applications for Private Land	)	
Mobile Radio Services	)	

To: The Private Radio Bureau

**AFFIDAVIT OF DR. CHARLES L. JACKSON**

1. I am a principal in Strategic Policy Research, a consulting firm that specializes in the telecommunications industry. I have reviewed the applications filed by Pinpoint, Inc. ("Pinpoint") and assisted Teletrac in the preparation of its Petition to Deny the Pinpoint Applications. I also have reviewed Pinpoint's Opposition to that Petition to Deny. In my view, Pinpoint's system is optimized for data rather than location services, and its claims of ability to share are simplistic at best. In reality the Pinpoint system should pose significant interference problems in a sharing environment.
2. I have been and continue to be an advocate for shared open entry bands where such usage is appropriate. For example, I believe that, if appropriate sharing rules or etiquettes are developed and enforced, the 20 MHz (1910-1930 MHz) the Commission has proposed to make available for unlicensed PCS will be a sound allocation, will serve the public well, and probably even should be expanded. But open entry spectrum requires great scrutiny and careful continuing regulation by the Commission if it is to achieve its promise.

3. I do not believe that an open entry policy is appropriate for WBPR AVM systems operating on the 902-928 MHz band under either the interim rules or permanent rules, given the requirements of this service as I discuss in the remainder of this affidavit.

## I. QUALIFICATIONS

4. I received my bachelor's degree with honors from Harvard College in Applied Mathematics. I received the M.S., E.E., and Ph.D. degrees in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology. At MIT, I was elected to Sigma Xi, a scientific honor society. I was also appointed to the MIT faculty while still a graduate student.

5. Before attending graduate school I worked for several years as a programmer and engineer on communications and computer systems. My employers included SRI-International (then named Stanford Research Institute) in Menlo Park, California, and Signatron Inc., Lexington, Massachusetts. I also wrote or co-authored several papers and received a U.S. patent for an alarm signaling system during this period. While at MIT, I worked at the communications engineering firm CNR.

6. While still at MIT, I began working as an engineering assistant to Commissioner Robinson of the Federal Communications Commission ("FCC"). Upon receiving my Ph.D. I went to work at the FCC as special assistant to the Chief of the Common Carrier Bureau. In 1976, I left the FCC to join the staff of the House Communications Subcommittee of the Energy and Commerce Committee. From 1976 to 1980, I worked on communications legislation, specializing in common carrier issues and radio spectrum management. Since 1980, I have been a consultant to a variety of companies and governments.

7. I have served as Chairman of Working Party 1 ("Policy and Regulation") of the Implementation Subcommittee of the FCC's Advisory Committee on Advanced Television, and as a member of the Special Panel that assessed the tests of proposed ATV systems. I serve on the executive committee for the University of Florida's Public Utility

Research Center ("PURC") and on the Spectrum Planning Advisory Committee ("SPAC") of the Department of Commerce. I have also served as an adjunct professor at Duke University.

## II. THE PINPOINT POSITION LACKS MERIT

### A. Introduction and Overview

8. The Commission has allocated the bands 904-912 MHz and 918-926 MHz for the operation of wideband, pulse-ranging AVM systems (WBPR AVM systems). This affidavit considers technical issues associated with the possible sharing of one wideband band segment in a single urban area by multiple system providers. I offer two primary observations:

- The FCC's rules permit licensees to operate WBPR AVM systems using a wide range of technologies. The rules do not set forth a framework for band-sharing by systems located in the same area. This lack, together with the range of permitted technologies, makes it impossible for a licensee to assure that its system can share the band with additional licensees.
- While time division multiple access (TDMA) may appear to some to offer a potential sharing mechanism for WBPR AVM systems, there are numerous difficulties with implementing sharing using TDMA technology. Those difficulties create significant risks of intolerable interference in a sharing environment.

I also observe (1) that a capacity claim made by Pinpoint in its applications and its Opposition to Informal Objection, appears to be in error; and (2) that narrowband signals have vastly different interference characteristics than do wideband systems.

### B. Spectrum Sharing by WBPR AVM Systems

9. The Commission's interim rules governing the operation of WBPR AVM systems (§90.239) give licensees broad technical flexibility in the design of those systems. The rules do not specify any of the following elements:

- modulation,



- timing
- multiplexing format for vehicle transmissions,
- codes and addressing, and
- synchronization signalling

10. The flexibility in the rules reasonably reflects the technical uncertainty facing the Commission at the time it adopted these interim rules. In 1974 there had been limited experience with WBPR AVM systems operating in the 902-928 MHz range; accordingly, the Commission and the industry lacked the knowledge to specify detailed technical rules. It was sound public policy for the Commission to adopt broad technical rules that limited out-of-band and out-of-area interference, but that otherwise gave the licensee broad technical flexibility. These rules protected others from interference but gave the AVM system designers broad latitude to design systems that took advantage of the latest technology.

11. Under the current interim rules a licensee could operate a system using asynchronous transmissions from mobile units to transmit location information,<sup>1</sup> or a licensee could use a centrally polled system where location information was transmitted only in response to interrogations from a central location. I believe it to be somewhere between extremely unlikely and impossible that such a pair of systems could coexist in the same band location in the same city and continue to provide location estimate of

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<sup>1</sup> One might object that such a system design, essentially using a pure Aloha multiplexing scheme, is inherently inefficient. However, judging efficiency depends upon the application. Use of an uncoordinated transmission removes the need for any receiver in the mobile unit, thus lowering the cost of the unit. For some vehicle location applications, the lower cost may more than make up for the system inefficiency of the Aloha scheme.